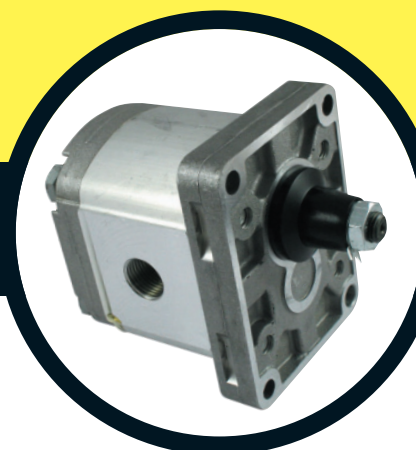
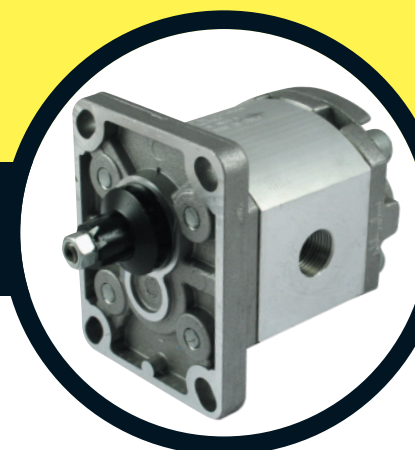
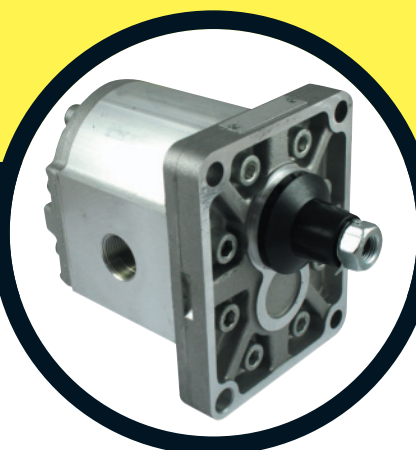
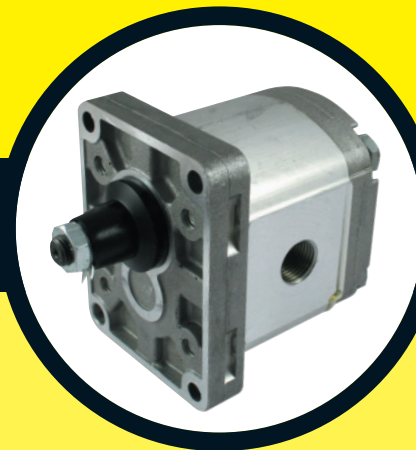
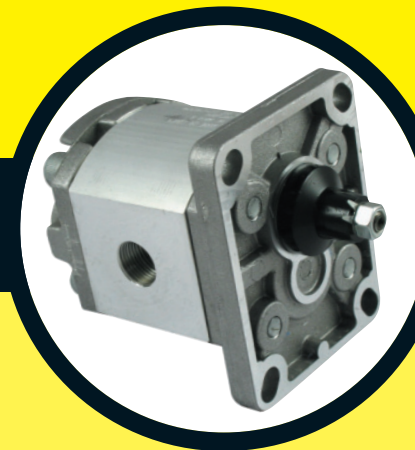
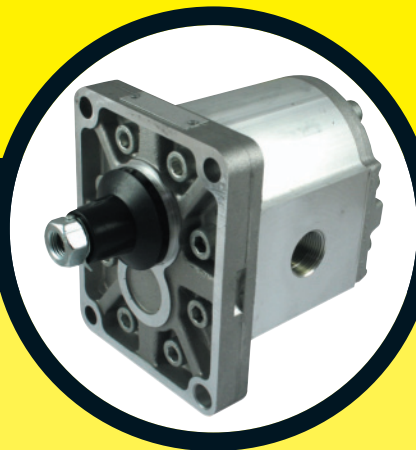


# GEAR MOTORS

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# FEATURES



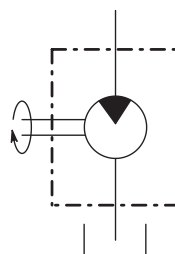
Motors with external gears from group 2 to group 3, divided into 17 displacements from 4 to 61,1cc, up to 270 bar of max working pressure and maximum speed up to 4000 rpm, with hydrostatic balance to reduce the axial slack.

Gear motors are available in unidirectional and reversible versions (reversible motors can be used same in serie circuit).

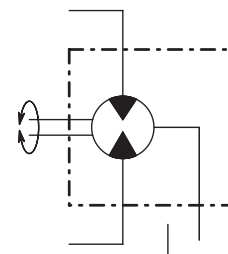
Each motor can be assembled with standard flanges (European, German or SAE) or with special ones (ZF, Perkins and Renault), with conic, cylindrical or splined shaft. Furthermore it is possible to assemble covers with two speed function and with pressure relief valve.

The motors are available in unidirectional D - S and reversible R version.

Unidirectional motor (D-S)



Reversible motor (R)



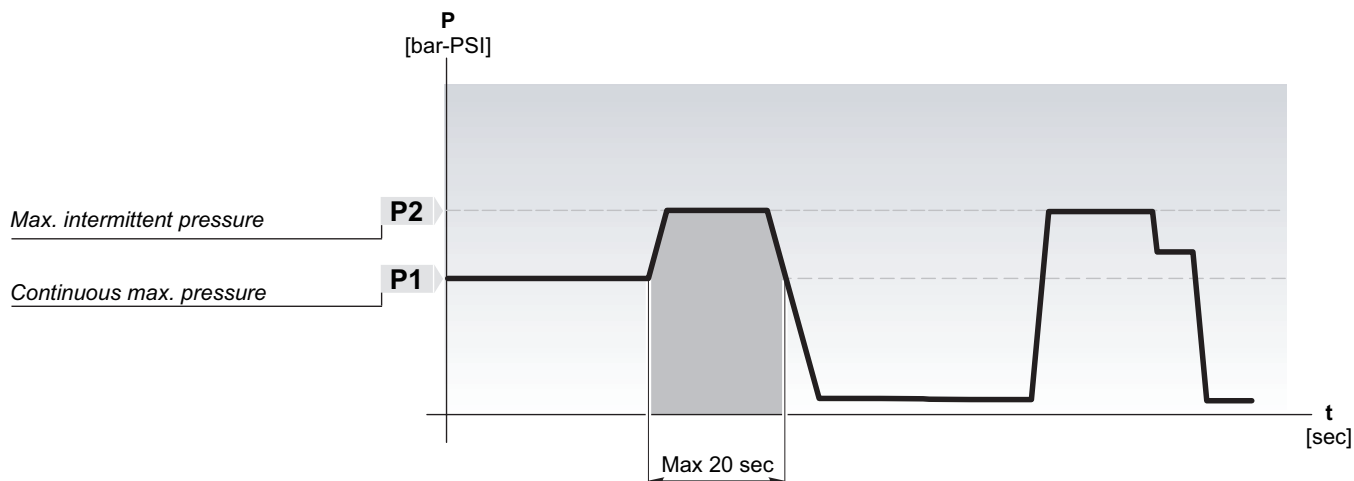
## USE CONDITIONS

- Temperature 20°C ÷ 65°C
- Max. temperature - 15 °C ÷ 80°C
- Suction allowed pressure min. 0.7 max. 3 bar (absolute)
- Recommended viscosity 15 ÷ 92 mm<sup>2</sup>/s
- Start max. viscosity 3000 mm<sup>2</sup>/s
- Filtering 26/23 150 ISO DIS 4406 until 2175 psi  
23/20 ISO DIS 4406 for higher pressure

# TECHNICAL INFORMATION



The motors can be subjected to the pressures P1, P2 indicated in the performance tables. The following diagram illustrates the definitions and applicability of these, compared to the rotation speed limits included.



## Hydraulic measures

<b>Q</b> Flow	[l/min - Gal/min]
<b>M</b> Torque	[Nm - lbf.in]
<b>P</b> Power	[kW - HP]
<b>V</b> Displacement	[cm <sup>3</sup> /rev - in <sup>3</sup> /rev]
<b>N</b> Speed	[min <sup>-1</sup> - rpm]
<b>Δp</b> Pressure	[bar - PSI]
$\eta_v$ Volumetric efficiency	
$\eta_m$ Mechanical efficiency	
$\eta_t$ Overall efficiency	

## Useful formulas

$$Q = \frac{V [\text{cm}^3/\text{rev}] \times n \times 10^3}{\eta_v} \text{ l/min}$$

$$M = \frac{\Delta p [\text{bar}] \times V [\text{cm}^3/\text{rev}] \times \eta_m}{62.83} \text{ Nm}$$

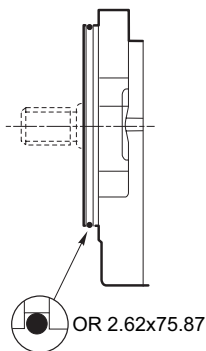
$$P = \frac{\Delta p [\text{bar}] \times V [\text{cm}^3/\text{rev}] \times n \times \eta_t}{600 \times 1000} \text{ kW}$$

## Conversion factors

1 l/min = 0.2641 US Gal/min
1 Nm = 8.851 in·lbs
1 Nm = 0.7375 ft·lbs
1 N = 0.2248 lbs
1kW = 1.34 HP
1cm <sup>3</sup> /giro = 0.061 in <sup>3</sup> /rev
1 bar = 14.5 PSI
1 mm = 0.0394 in
1 kg = 2.205 lbs



## SAE A-OR

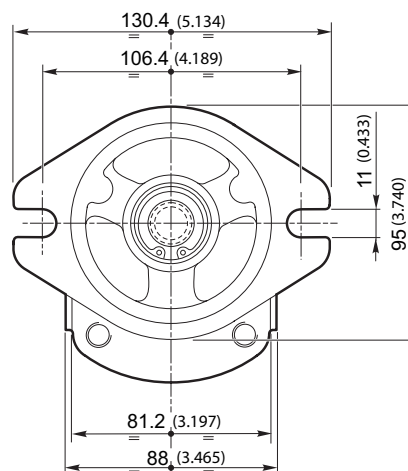
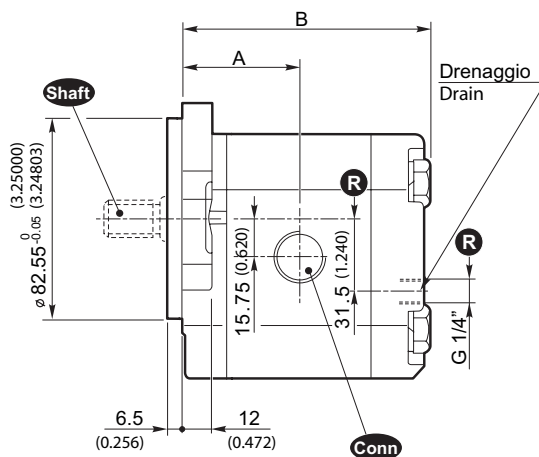


OR 2.62x75.87

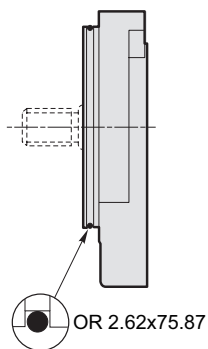
**R** Only for reversible motors

## SAE A

### Flange and cover in Aluminium



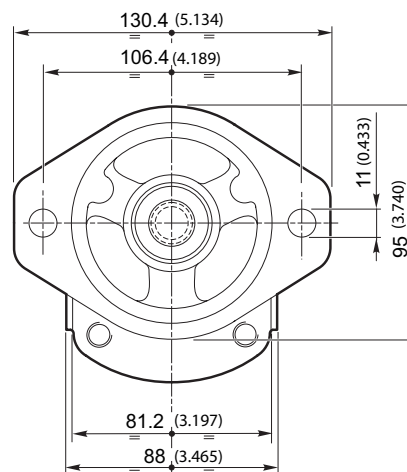
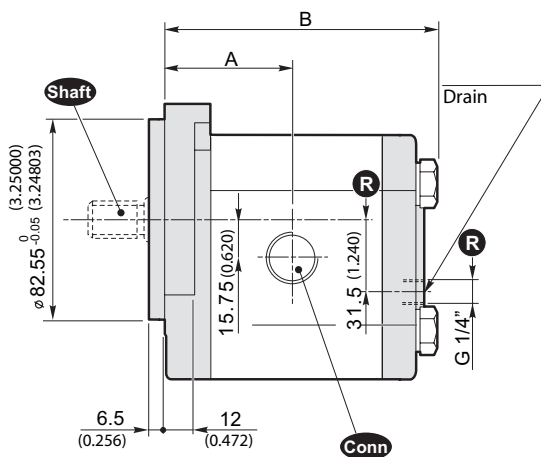
## SAE A-OR



OR 2.62x75.87

## SAE A

### Flange and cover in Cast iron



### SAE A, SAE A-OR (Aluminium)

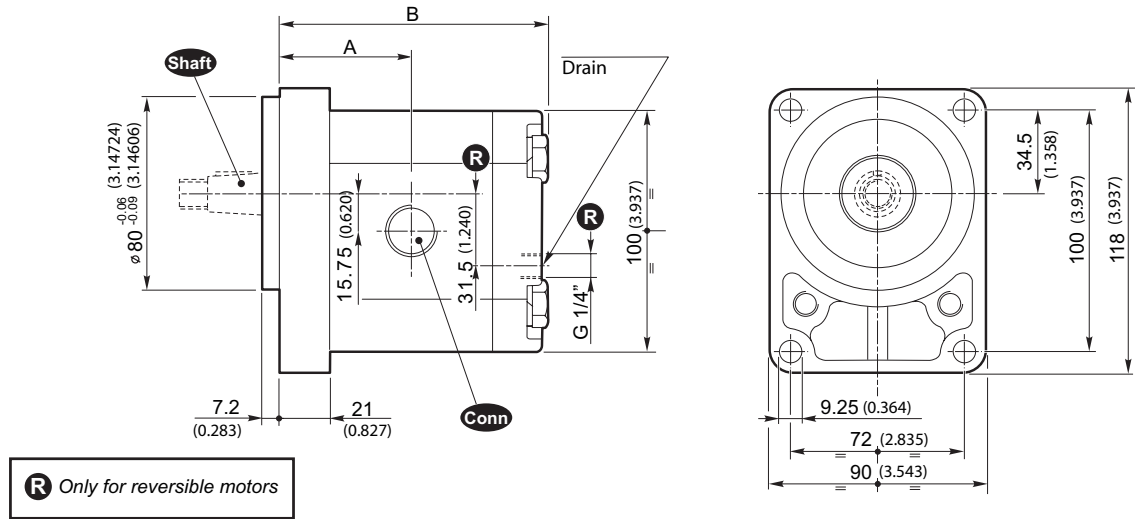
### SAE A, SAE A-OR (Cast iron)

Size	Displacement [cm <sup>3</sup> /rev] (in <sup>3</sup> /rev)	Dimensions		Mass [Kg] (lbs)	Shaft	Conn	Dimensions		Mass [Kg] (lbs)	Shaft	Conn
		A [mm] (inch)	B [mm] (inch)				A [mm] (inch)	B [mm] (inch)			
2SM_4	4 (0.24)	44.4 (1.748)	93 (3.661)	2.30 (5.1)	10 11 12 13 14 15 16	G N T M U W F	44.4 (1.748)	93 (3.661)	3.40 (7.5)	10 11 12 13 14 15 16	G N T M U W F
2SM_6	6 (0.37)	46 (1.811)	96.3 (3.791)	2.45 (5.4)			46 (1.811)	96.3 (3.791)	3.55 (7.8)		
2SM_8	8.5 (0.52)	48.1 (1.894)	100.5 (3.957)	2.60 (5.7)			48.1 (1.894)	100.5 (3.957)	3.70 (8.2)		
2SM_11	11 (0.67)	50.2 (1.976)	104.6 (4.118)	2.70 (6.0)			50.2 (1.976)	104.6 (4.118)	3.80 (8.4)		
2SM_14	14 (0.85)	52.7 (2.075)	109.6 (4.315)	2.80 (6.2)			52.7 (2.075)	109.6 (4.315)	3.90 (8.6)		
2SM_16	16.5 (1.01)	54.8 (2.157)	113.8 (4.480)	2.95 (6.5)			54.8 (2.157)	113.8 (4.480)	4.05 (8.9)		
2SM_19	19.5 (1.19)	57.3 (2.256)	118.8 (4.677)	3.10 (6.8)			57.3 (2.256)	118.8 (4.677)	4.20 (9.3)		
2SM_22	22.5 (1.37)	59.8 (2.354)	123.8 (4.874)	3.25 (7.2)			59.8 (2.354)	123.8 (4.874)	4.35 (9.6)		
2SM_26	26 (1.59)	62.7 (2.469)	129.6 (5.102)	3.40 (7.5)			62.7 (2.469)	129.6 (5.102)	4.50 (9.9)		

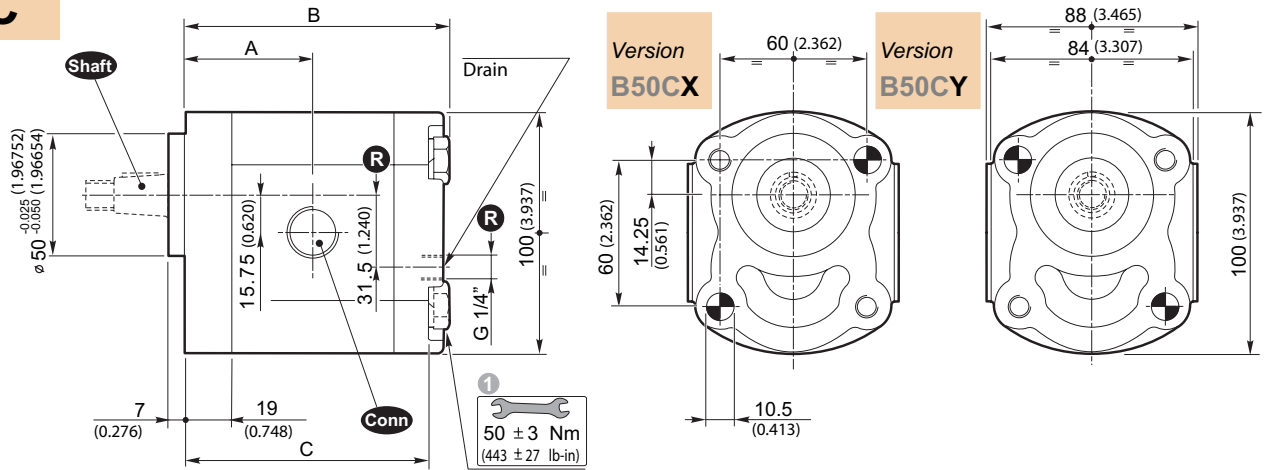
SEE PAGES 219/220 FOR PORT SIZES AVAILABLE

SEE PAGE 226 FOR PRICES

## B80C



## B50C



- 1 Tightening torque of screws:  $443 \pm 27$  lb-in. Use screws type 10.9 - 12.9 UNI EN 20898/1.  
 The assembling of the pump should be effected with 2 screw studs type 10.9 - 12.9 pre-tighten at  $354 \pm 27$  lb-in.  
 Fix the pump by self-locking nuts with tightening torque  $443 \pm 27$  lb-in.

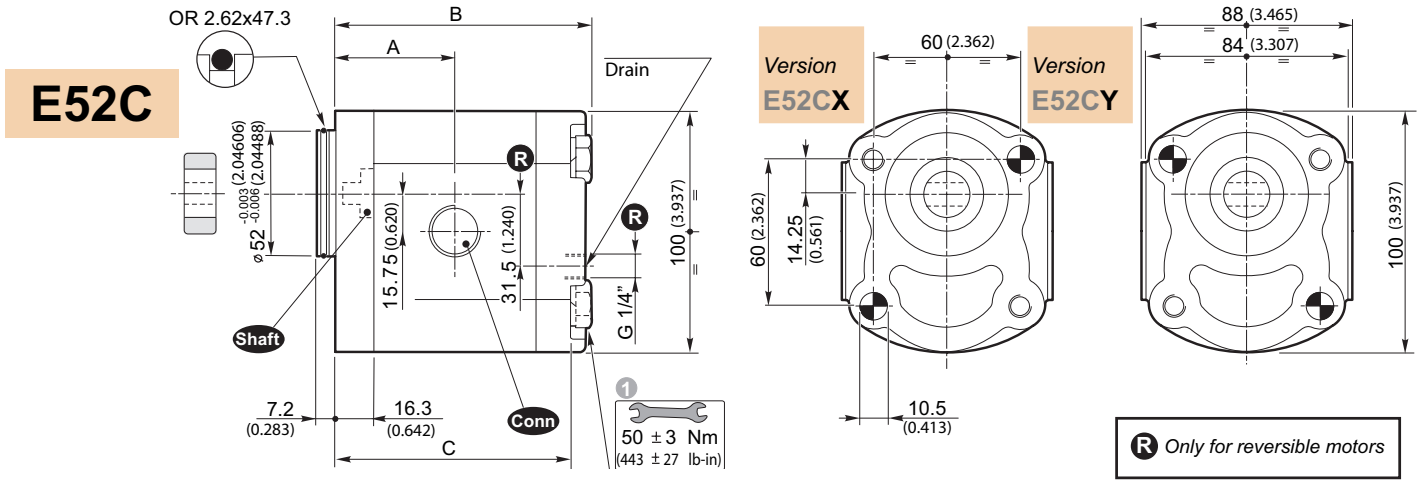
The screws kit for the pump assembling should be ordered separately.  
 Ordering code of fixing Kit:

0029W + Length L (see table)

**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

Size	Displacement [cm <sup>3</sup> /rev] [in <sup>3</sup> /rev]	B80C					B50C						
		Dimensions		Mass	Shaft	Conn	Dimensions				Mass	Shaft	Conn
		A	B				A	B	C	L 1			
[mm] [inch]	[mm] [inch]	[Kg] [lbs]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[Kg] [lbs]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[Kg] [lbs]	
2SM A4	4 (0.24)	46.4 (1.827)	95 (3.740)	2.30 (5.1)	10	G N T M U W F	44.4 (1.748)	93 (3.661)	84 (3.307)	105 (4.134)	2.30 (5.1)	10	G N T M U W F
2SM A6	6 (0.37)	48 (1.890)	98.3 (3.870)	2.45 (5.4)			46 (1.811)	96.3 (3.791)	87.3 (3.437)	105 (4.134)	2.45 (5.4)		
2SM A8	8.5 (0.52)	50.1 (1.972)	102.5 (4.035)	2.60 (5.7)			48.1 (1.894)	100.5 (3.957)	91.5 (3.602)	110 (4.331)	2.60 (5.7)		
2SM A11	11 (0.67)	52.2 (2.055)	106.6 (4.197)	2.70 (6.0)			50.2 (1.976)	104.6 (4.118)	95.6 (3.764)	115 (4.528)	2.70 (6.0)		
2SM A14	14 (0.85)	54.7 (2.154)	111.6 (4.394)	2.80 (6.2)			52.7 (2.075)	109.6 (4.315)	100.6 (3.961)	120 (4.724)	2.80 (6.2)		
2SM A16	16.5 (1.01)	56.8 (2.236)	115.8 (4.559)	2.95 (6.5)			54.8 (2.157)	113.8 (4.480)	104.8 (4.126)	125 (4.921)	2.95 (6.5)		
2SM A19	19.5 (1.19)	59.3 (2.335)	120.8 (4.756)	3.10 (6.8)			57.3 (2.256)	118.8 (4.677)	109.8 (4.323)	130 (5.118)	3.10 (6.8)		
2SM A22	22.5 (1.37)	61.8 (2.433)	125.8 (4.953)	3.25 (7.2)			59.8 (2.354)	123.8 (4.874)	114.8 (4.520)	135 (5.315)	3.25 (7.2)		
2SM A26	26 (1.59)	64.7 (2.547)	131.6 (5.181)	3.40 (7.5)			62.7 (2.469)	129.6 (5.102)	120.6 (4.748)	140 (5.512)	3.40 (7.5)		

SEE PAGE 226 FOR PRICES



① **Tightening torque of screws: 443 ± 27 lb-in. Use screws type 10.9 - 12.9 UNI EN 20898/1.**  
 The assembling of the pump should be effected with 2 screw studs type 10.9 - 12.9 pre-tighten at 354 ± 27 lb-in.  
 Fix the pump by self-locking nuts with tightening torque 443 ± 27 lb-in.

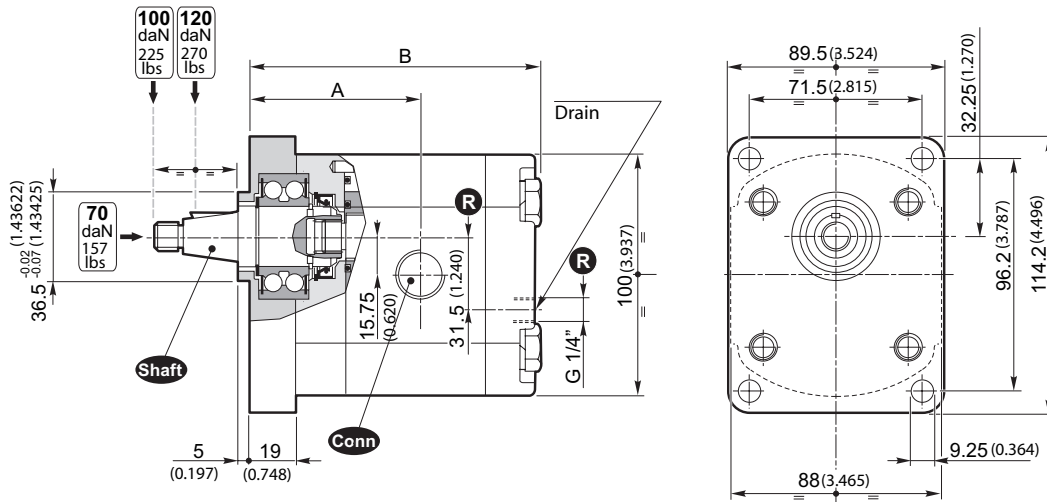
The screws kit for the fixing of the pump should be ordered separately.  
 Ordering code of fixing Kit:

**0029W** + Length L (see table)

E52C								
Size	Displacement [cm <sup>3</sup> /rev] [in <sup>3</sup> /rev]	Dimensions				Mass [Kg] [lbs]	Shaft	Conn
		A [mm] [inch]	B [mm] [inch]	C [mm] [inch]	L ① [mm] [inch]			
<b>2SM A4</b>	<b>4</b> (0.24)	41.7 (1.642)	90.3 (3.555)	81.3 (3.201)	100 (3.937)	2.30 (5.1)	17	G N T M U W F
<b>2SM A6</b>	<b>6</b> (0.37)	43.3 (1.705)	93.6 (3.685)	84.6 (3.331)	105 (4.134)	2.45 (5.4)		
<b>2SM A8</b>	<b>8.5</b> (0.52)	45.4 (1.787)	97.8 (3.850)	88.8 (3.496)	110 (4.331)	2.60 (5.7)		
<b>2SM A11</b>	<b>11</b> (0.67)	47.5 (1.870)	101.9 (4.012)	92.9 (3.657)	115 (4.528)	2.70 (6.0)		
<b>2SM A14</b>	<b>14</b> (0.85)	50 (1.969)	106.9 (4.209)	97.9 (3.854)	120 (4.724)	2.80 (6.2)		
<b>2SM A16</b>	<b>16.5</b> (1.01)	52.1 (2.051)	111.1 (4.374)	102.1 (4.020)	120 (4.724)	2.95 (6.5)		
<b>2SM A19</b>	<b>19.5</b> (1.19)	54.6 (2.150)	116.1 (4.571)	107.1 (4.217)	125 (4.921)	3.10 (6.8)		
<b>2SM A22</b>	<b>22.5</b> (1.37)	57.1 (2.248)	121.1 (4.768)	112.1 (4.413)	130 (5.118)	3.25 (7.2)		
<b>2SM A26</b>	<b>26</b> (1.59)	60 (2.362)	126.9 (4.996)	117.9 (4.642)	140 (5.512)	3.40 (7.5)		

**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

SEE PAGE 226 FOR PRICES



**R** Only for reversible motors

Version to use with axial and/or radial loads

## SUPP.STND

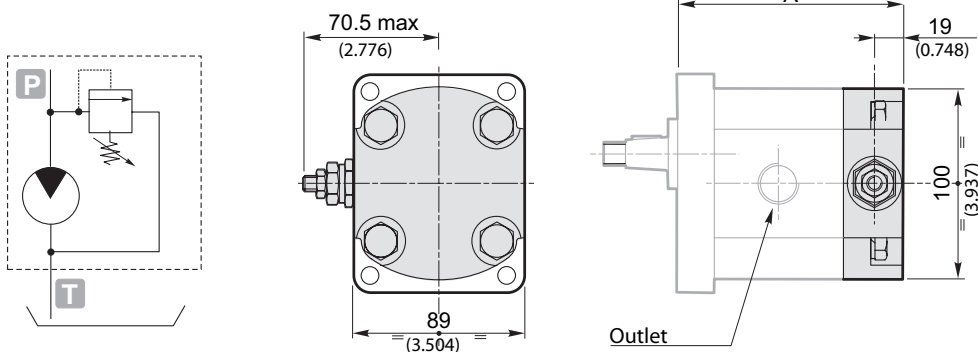
Size	Displacement [cm <sup>3</sup> /rev] (in <sup>3</sup> /rev)	Dimensions		Mass [Kg] (lbs)	Shaft	Conn
		A [mm] (inch)	B [mm] (inch)			
2SM A4	4 (0.24)	64.4 (2.535)	113 (4.449)	2.80 (6.2)	10	G N T M U W F
2SM A6	6 (0.37)	66 (2.598)	116.3 (4.579)	2.88 (6.4)		
2SM A8	8.5 (0.52)	68.1 (2.681)	120.5 (4.744)	3.00 (6.6)		
2SM A11	11 (0.67)	70.2 (2.764)	124.6 (4.906)	3.12 (6.9)		
2SM A14	14 (0.85)	72.7 (2.862)	129.6 (5.102)	3.27 (7.2)		
2SM A16	16.5 (1.01)	74.8 (2.945)	133.8 (5.268)	3.39 (7.5)		
2SM A19	19.5 (1.19)	77.3 (3.043)	138.8 (5.465)	3.53 (7.8)		
2SM A22	22.5 (1.37)	79.8 (3.142)	143.8 (5.661)	3.67 (8.1)		
2SM A26	26 (1.59)	82.7 (3.256)	149.6 (5.890)	3.84 (8.5)		

**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

SEE PAGE 226 FOR PRICES

## VLP- I (N)

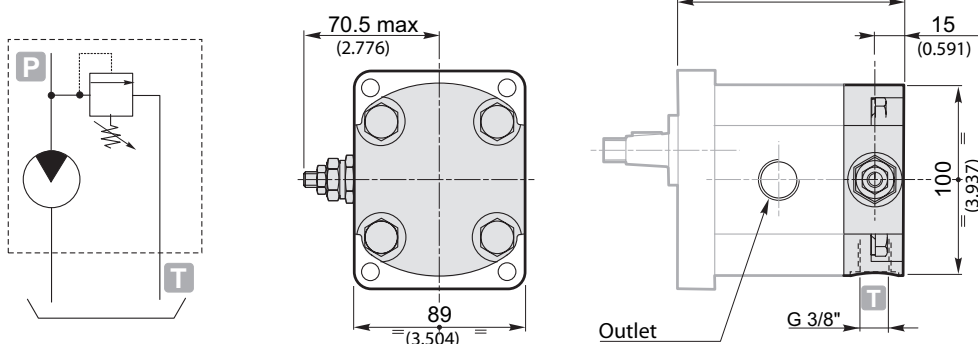
Pressure relief valve with internal exhaust



	A		
	Standard SAE A B50C	B80C	E52C
2SM A4	104.8 (4.126)	106.8 (4.205)	102.1 (4.020)
2SM A6	108.1 (4.256)	110.1 (4.335)	105.4 (4.150)
2SM A8	112.3 (4.421)	114.3 (4.500)	109.6 (4.315)
2SM A11	116.4 (4.583)	118.4 (4.661)	113.7 (4.476)
2SM A14	121.4 (4.780)	123.4 (4.858)	118.7 (4.673)
2SM A16	125.6 (4.945)	127.6 (5.024)	122.9 (4.839)
2SM A19	130.6 (5.142)	132.6 (5.220)	127.9 (5.035)
2SM A22	135.6 (5.339)	137.6 (5.417)	132.9 (5.232)
2SM A26	141.4 (5.567)	143.4 (5.646)	138.7 (5.461)

## VLP- E (N)

Pressure relief valve with external exhaust



	A		
	Standard SAE A B50C	B80C	E52C
2SM A4	100.8 (3.969)	102.8 (4.047)	98.1 (3.862)
2SM A6	104.1 (4.098)	106.1 (4.177)	101.4 (3.992)
2SM A8	108.3 (4.264)	110.3 (4.343)	105.6 (4.157)
2SM A11	112.4 (4.425)	114.4 (4.504)	109.7 (4.319)
2SM A14	117.4 (4.622)	119.4 (4.701)	114.7 (4.516)
2SM A16	121.6 (4.787)	123.6 (4.866)	118.9 (4.681)
2SM A19	126.6 (4.984)	128.6 (5.063)	123.9 (4.878)
2SM A22	131.6 (5.181)	133.6 (5.260)	128.9 (5.075)
2SM A26	137.4 (5.409)	139.4 (5.488)	134.7 (5.303)

### Warning.

The pressure relief valve can be applied by substituting the rear cover.

It is supplied only with aluminium flange and cover.

The showed motors are clockwise rotation.

The opening of the pressure relief valve should carry out for times not over 10" each minute to avoid the overheating of the pump.

**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

Example of ordering code

2SM	A	14	D	SAE A	-	10	G	(VT)	VLP-I	(N)
VLP-I	Cover with VLP								VPL-I (at internal exhaust) VLP-E (at external exhaust)	
(N)	Spring type								B - N - R (See table)	

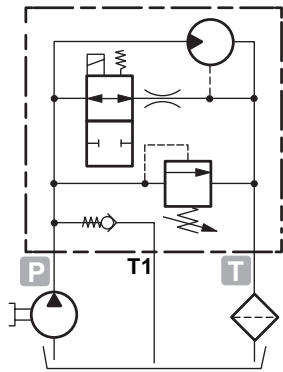
		Spring type		
		B	N	R
		white spring	black spring	red spring
Calibration fields*	[bar] (psi)	10 ÷ 100 (145 ÷ 1450)	30 ÷ 280 (435 ÷ 4060)	80 ÷ 380 (1160 ÷ 5510)

\* Without setting request, it will be considered standard (black spring: 2175 psi).

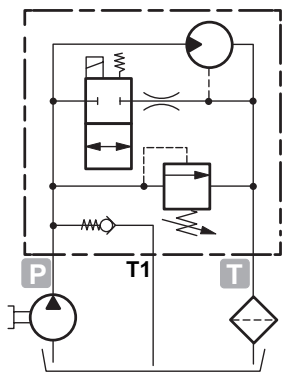
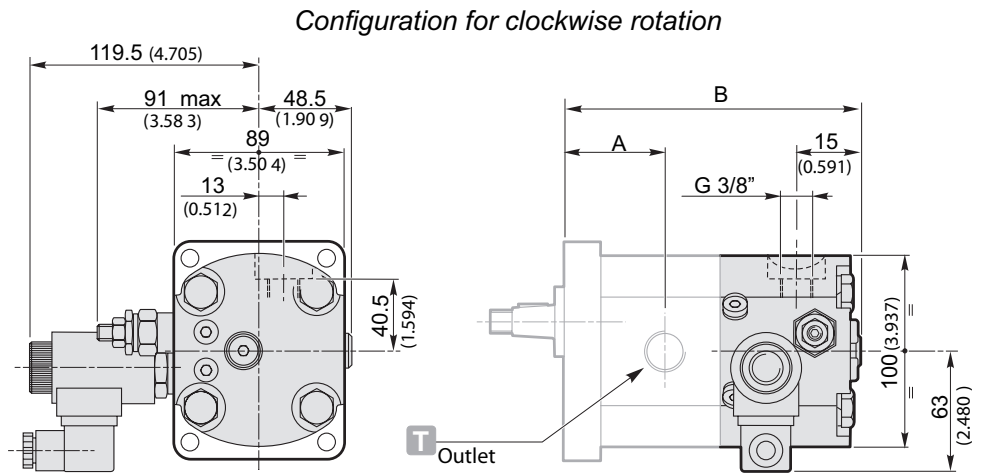
SEE PAGE 226 FOR PRICES



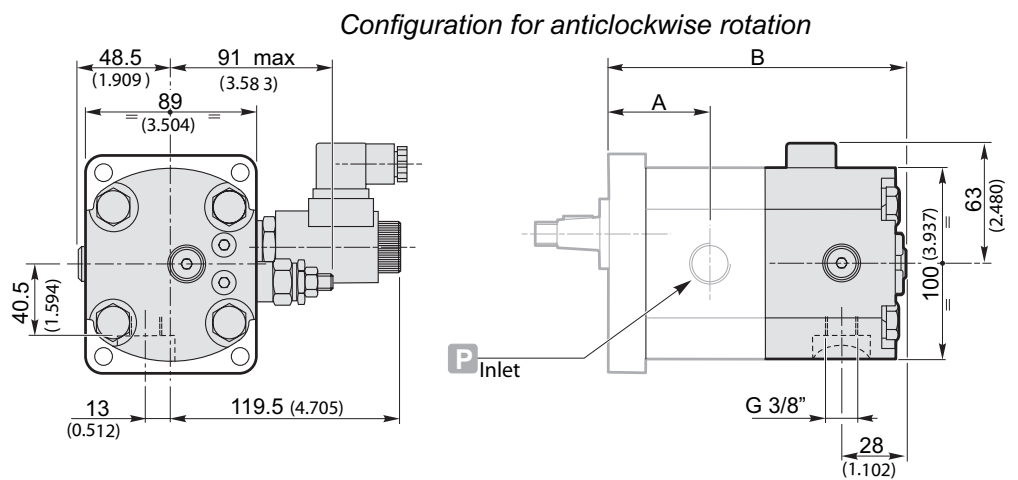
## Two speed unidirectional motors with VLP pressure relief valve



Electro Valve normally open (NA)



Electro Valve normally closed (NC)



	2SM A4	2SM A6	2SM A8	2SM A11	2SM A14	2SM A16	2SM A19	2SM A22	2SM A26
<b>A</b>	44.4 (1.748)	46 (1.811)	48.1 (1.894)	50.2 (1.976)	52.7 (2.075)	54.8 (2.157)	57.3 (2.256)	59.8 (2.354)	62.7 (2.469)
<b>B</b>	142.3 (5.602)	145.6 (5.732)	149.8 (5.898)	153.9 (6.059)	158.9 (6.256)	163.1 (6.421)	168.1 (6.618)	173.1 (6.815)	182 (7.165)

Example of ordering code

2SM	A14	D	NA	(24VDC)	VLP	(N)	SAE A	-	10	G
<b>NA</b>	NA = Normally open NC = Normally closed					NA = Normally open NC = Normally closed				
<b>24VDC</b>	Electromagnet voltage					12 - 24 - 48 V. DC 24 - 48 - 110 - 220 V. AC (50 Hz)				
<b>VLP</b>	Cover with VLP									
<b>(N)</b>	Spring type					B - N - R (See table)				

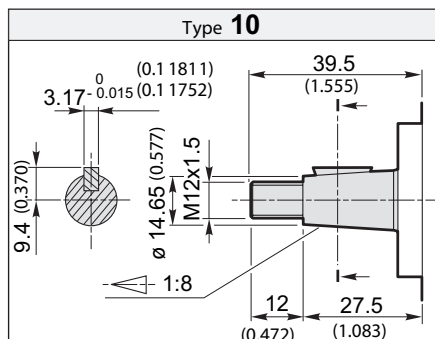
N.B.  
Only motors with flange and cover in Aluminium

		Spring type		
		B	N	R
		white spring	black spring	red spring
Calibration fields*	[bar] (psi)	10 ÷ 100 (145 ÷ 1450)	30 ÷ 280 (435 ÷ 4060)	80 ÷ 380 (1160 ÷ 5510)

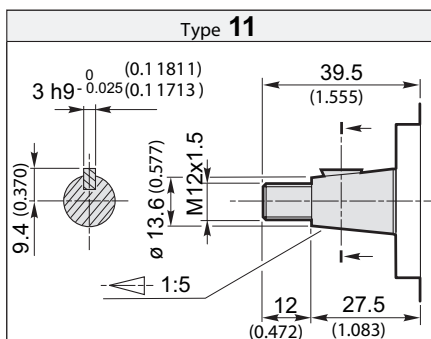
**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

\* Without setting request, it will be considered standard (black spring: 2175 psi).

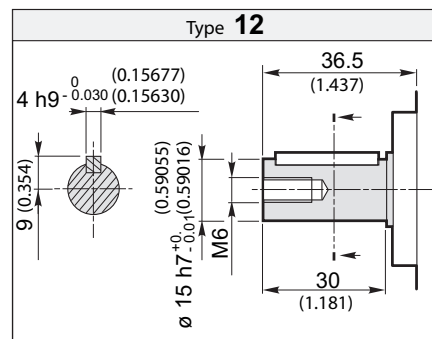
SEE PAGE 226 FOR PRICES



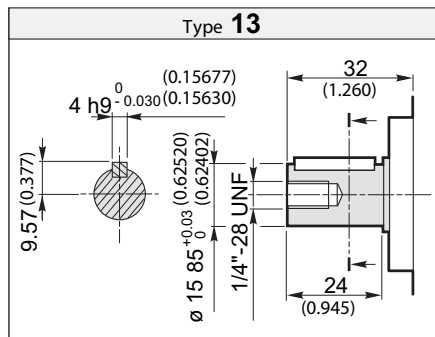
Torque 98 Nm / Torque 72.3 ft-lbs



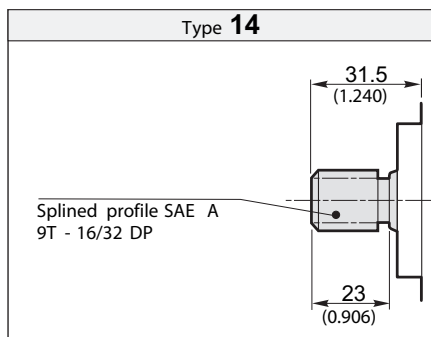
Torque 98 Nm / Torque 72.3 ft-lbs



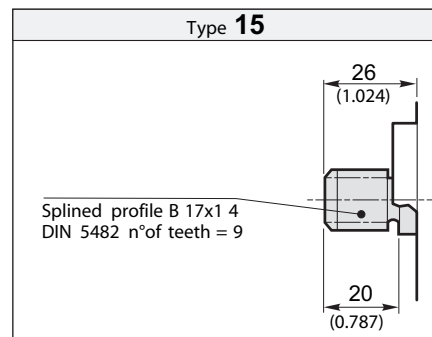
Torque 98 Nm / Torque 72.3 ft-lbs



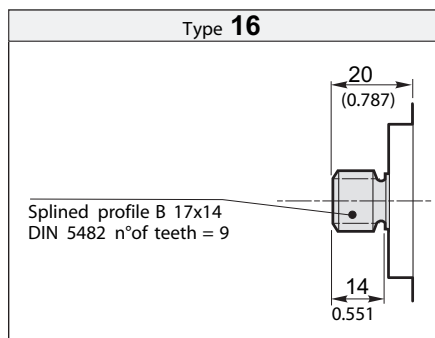
Torque 98 Nm / Torque 72.3 ft-lbs



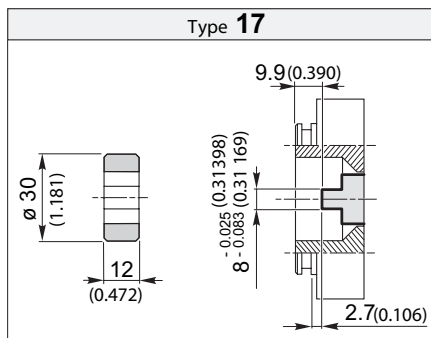
Torque 98 Nm / Torque 72.3 ft-lbs



Torque 98 Nm / Torque 72.3 ft-lbs



Torque 98 Nm / Torque 72.3 ft-lbs



Torque 70 Nm / Torque 51.6 ft-lbs

SEE PAGE 226 FOR PRICES

# MOTORS GROUP 2 • CONNECTIONS FOR D-S MOTORS



**G**

Outlet

C

Delivery<sup>a</sup>

G 1/2"

Size	
4 ÷ 8	
C	G 1/2"
Size	
11 ÷ 26	
C	G 3/4"

**N**

Outlet

D

C

d

Delivery<sup>a</sup>

30 (1.181)

13 (0.709)

M6

Size		
4 ÷ 8		
C	D	d
13 (0.512)	30 (1.181)	M6
Size		
11 ÷ 26		
C	D	d
19 (0.748)	40 (1.575)	M8

**T**

Outlet

90°

M6

40 (1.575)

20 (0.787)

Delivery<sup>a</sup>

90°

M6

35 (1.378)

15 (0.709)

**M**

Outlet

D

C

M8

Delivery<sup>a</sup>

40 (1.575)

19 (0.748)

M8

Size	
11 ÷ 26	
C	D
19 (0.748)	40 (1.575)

**U**

Outlet

C

Delivery

7/8 14UNF

Size	
4 ÷ 8	
C	7/8 14UNF
Size	
11 ÷ 26	
C	1" 1/16 12UN

**W**

Outlet

1" 5/16 12UN

Delivery

1" 1/16 12UN

**F**

Outlet

E

D

C

M6

Delivery

17.4 (0.685)

38 (1.496)

15 (0.591)

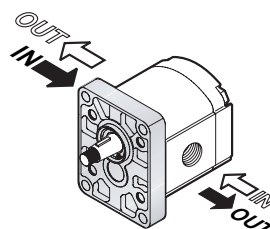
M6

Size		
4 ÷ 11		
C	D	E
20 (0.787)	38 (1.496)	17.4 (0.685)
Size		
14 ÷ 26		
C	D	E
26 (1.024)	22.4 (0.882)	47.6 (1.874)



The sign on the body identifies the **outlet side** for the motors.

Connections positions

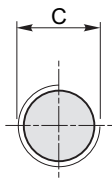


Rotation	
D	S

SEE PAGE 226 FOR PRICES

## G

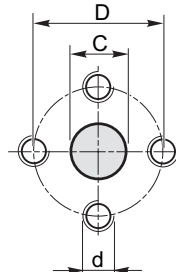
Delivery / Outlet



Size <b>4 ÷ 8</b>	
<b>C</b>	
G 1/2"	
Size <b>11 ÷ 26</b>	
<b>C</b>	
G 3/4"	

## N

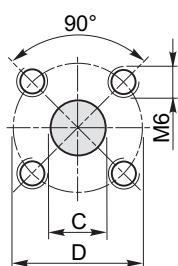
Delivery / Outlet



Size <b>4 ÷ 8</b>		
<b>C</b>	<b>D</b>	<b>d</b>
13 (0.512)	30 (1.181)	M6
Size <b>11 ÷ 26</b>		
<b>C</b>	<b>D</b>	<b>d</b>
19 (0.748)	40 (1.575)	M8

## T

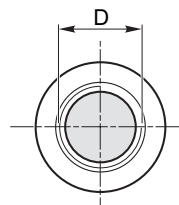
Delivery / Outlet



Size <b>4 ÷ 8</b>	
<b>C</b>	<b>D</b>
15 (0.591)	35 (1.378)
Size <b>11 ÷ 26</b>	
<b>C</b>	<b>D</b>
20 (0.787)	40 (1.575)

## U

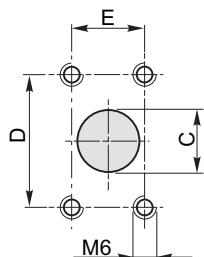
Delivery / Outlet



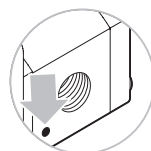
Size <b>4 ÷ 8</b>	
<b>D</b>	
7/8 14UNF	
Size <b>11 ÷ 26</b>	
<b>D</b>	
1" 1/16 12UN	

## F

Delivery / Outlet

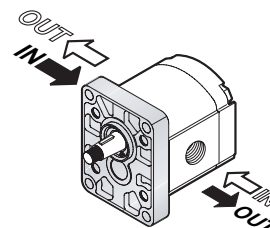


Size <b>4 ÷ 11</b>		
<b>C</b>	<b>D</b>	<b>E</b>
20 (0.787)	38 (1.496)	17.4 (0.685)
Size <b>14 ÷ 26</b>		
<b>C</b>	<b>D</b>	<b>E</b>
26 (1.024)	22.4 (0.882)	47.6 (1.874)



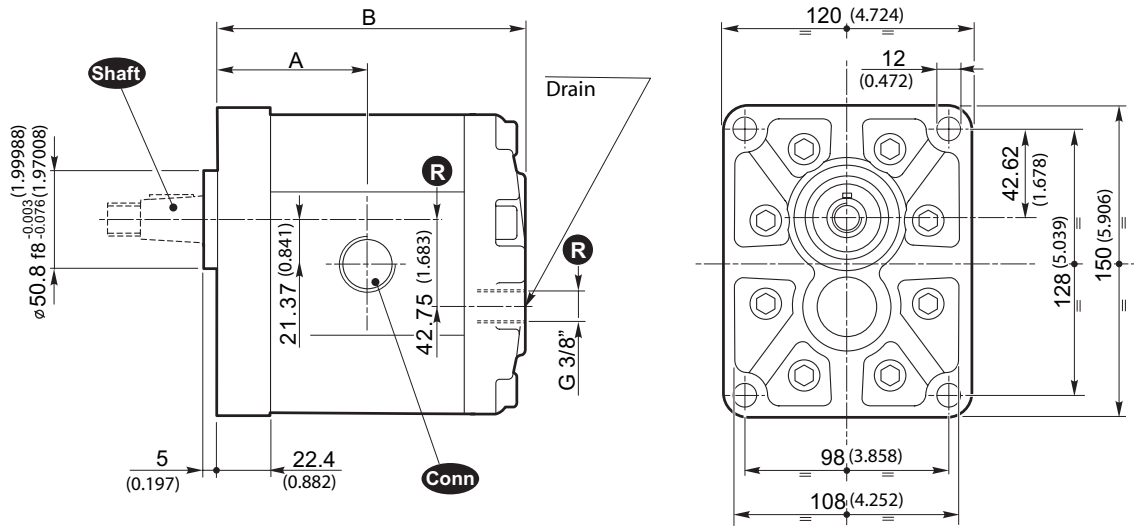
Any sign on the body in reversible motors is not considered.

Connections positions

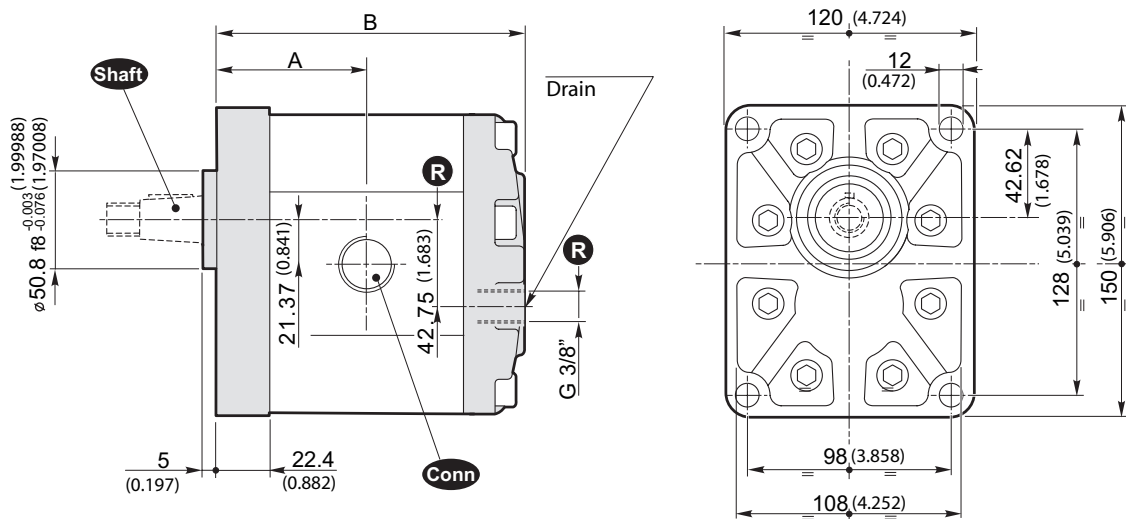


Rotation <b>R</b>

## Flange and cover in Aluminium



## Flange and cover in Cast iron



**R** Only for reversible motors

Size	Displacement [cm <sup>3</sup> /rev] (in <sup>3</sup> /rev)	STND (Aluminium)			Shaft	Conn	STND (Cast iron)			Shaft	Conn
		Dimensions		Mass			Dimensions		Mass		
		A [mm] (inch)	B [mm] (inch)	[Kg] (lbs)			A [mm] (inch)	B [mm] (inch)	[Kg] (lbs)		
3SM 19	19 (1.16)	62.4 (2.457)	128.3 (5.051)	5.23 (11.5)	10 13 14	G N T W F	62.4 (2.457)	128.3 (5.051)	7.53 (16.6)	10 13 14	G N T W F
3SM 22	22.3 (1.36)	63.9 (2.516)	131.3 (5.169)	5.36 (11.8)			63.9 (2.516)	131.3 (5.169)	7.66 (16.9)		
3SM 29	29.3 (1.79)	66.9 (2.634)	137.3 (5.406)	5.64 (12.4)			66.9 (2.634)	137.3 (5.406)	7.94 (17.5)		
3SM 33	32.9 (2.01)	68.4 (2.693)	140.3 (5.524)	5.78 (12.7)			68.4 (2.693)	140.3 (5.524)	8.08 (17.8)		
3SM 36	36.4 (2.22)	69.9 (2.752)	143.3 (5.642)	5.91 (13.0)			69.9 (2.752)	143.3 (5.642)	8.21 (18.1)		
3SM 44	43.5 (2.65)	72.9 (2.870)	149.3 (5.878)	6.19 (13.7)			72.9 (2.870)	149.3 (5.878)	8.49 (18.7)		
3SM 52	51.7 (3.15)	76.4 (3.008)	156.3 (6.154)	6.50 (14.3)			76.4 (3.008)	156.3 (6.154)	8.80 (19.4)		
3SM 62	61.1 (3.73)	80.4 (3.165)	164.3 (6.469)	6.87 (15.1)			80.4 (3.165)	164.3 (6.469)	9.17 (20.2)		

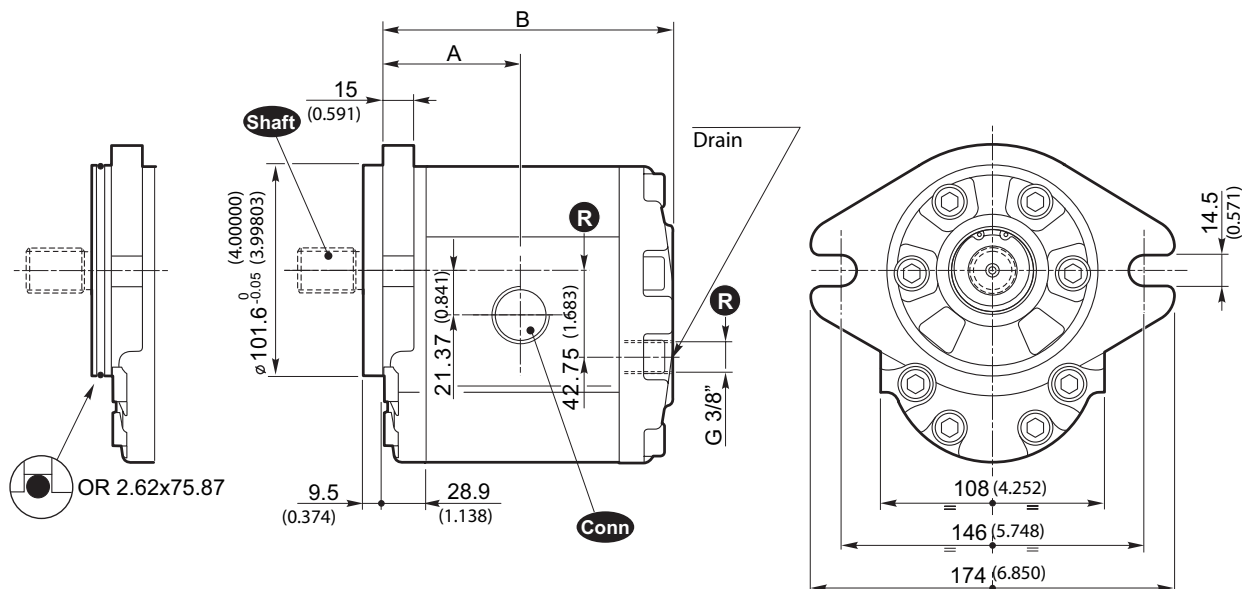
**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

SEE PAGE 226 FOR PRICES

## SAE B-OR

## SAE B

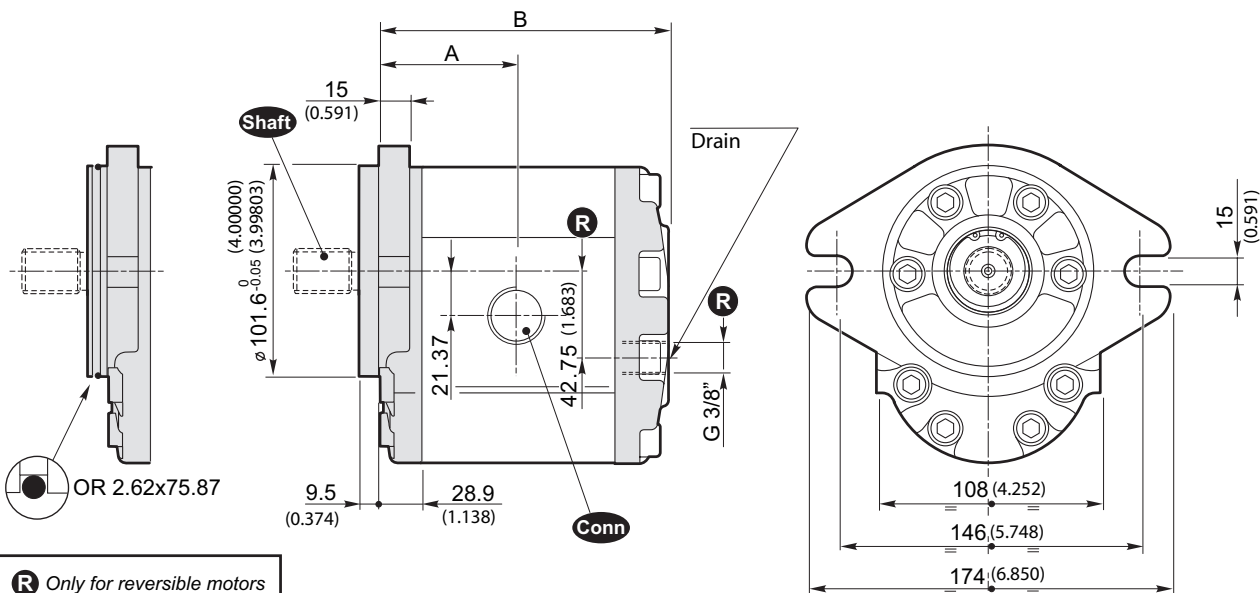
Flange and cover in Aluminium



## SAE B-OR

## SAE B

Flange and cover in Cast iron



**R** Only for reversible motors

### SAE B, SAE B-OR (Aluminium)

### SAE B, SAE B-OR (Cast iron)

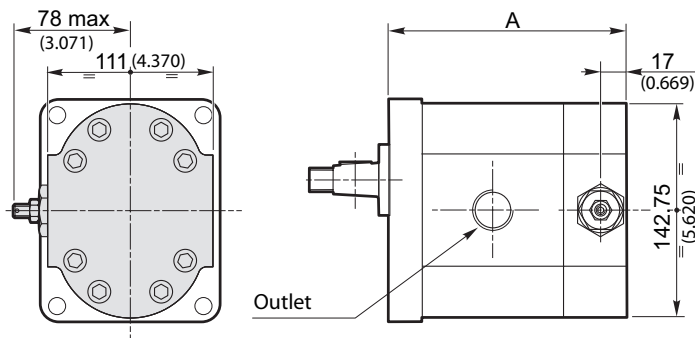
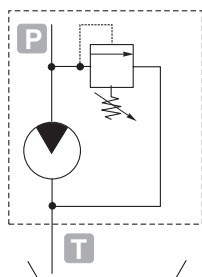
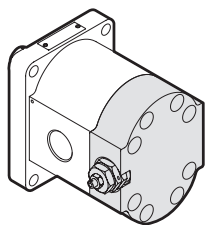
Size	Displacement [cm <sup>3</sup> /rev] [in <sup>3</sup> /rev]	Dimensions			Shaft	Conn	Dimensions			Shaft	Conn
		A [mm] [inch]	B [mm] [inch]	Mass [Kg] [lbs]			A [mm] [inch]	B [mm] [inch]	Mass [Kg] [lbs]		
3SM 19	19 (1.16)	59.4 (2.339)	125.3 (4.933)	5.23 (11.5)	10 13 14	G N T W F	59.4 (2.339)	125.3 (4.933)	7.59 (16.7)	10 13 14	G N T W F
3SM 22	22.3 (1.36)	60.9 (2.398)	128.3 (5.051)	5.36 (11.8)			60.9 (2.398)	128.3 (5.051)	7.72 (17.0)		
3SM 29	29.3 (1.79)	63.9 (2.516)	134.3 (5.287)	5.64 (12.4)			63.9 (2.516)	134.3 (5.287)	8.00 (17.6)		
3SM 33	32.9 (2.01)	65.4 (2.575)	137.3 (5.406)	5.78 (12.7)			65.4 (2.575)	137.3 (5.406)	8.14 (18.0)		
3SM 36	36.4 (2.22)	66.9 (2.634)	140.3 (5.524)	5.91 (13.0)			66.9 (2.634)	140.3 (5.524)	8.27 (18.2)		
3SM 44	43.5 (2.65)	69.9 (2.752)	146.3 (5.760)	6.19 (13.7)			69.9 (2.752)	146.3 (5.760)	8.55 (18.9)		
3SM 52	51.7 (3.15)	73.4 (2.890)	153.3 (6.035)	6.50 (14.3)			73.4 (2.890)	153.3 (6.035)	8.86 (19.5)		
3SM 62	61.1 (3.73)	77.4 (3.047)	161.3 (6.350)	6.87 (15.1)			77.4 (3.047)	161.3 (6.350)	9.23 (20.4)		

SEE PAGES 219/220 FOR PORT SIZES AVAILABLE

SEE PAGE 226 FOR PRICES

## VLP- I (N)

Pressure relief valve with internal exhaust



	A		
	Standard	SAE AA	E32 BX E32 CX
<b>3SM 19</b>	127.3 (5.012)	129.3 (5.091)	124.6 (4.906)
<b>3SM 22</b>	130.3 (5.130)	132.3 (5.209)	127.6 (5.024)
<b>3SM 29</b>	136.3 (5.366)	138.3 (5.445)	133.6 (5.260)
<b>3SM 33</b>	139.3 (5.484)	141.3 (5.563)	136.6 (5.378)
<b>3SM 36</b>	142.3 (5.602)	144.3 (5.681)	139.6 (5.496)
<b>3SM 44</b>	148.3 (5.839)	150.3 (5.917)	145.6 (5.732)
<b>3SM 52</b>	155.3 (6.114)	157.3 (6.193)	152.6 (6.008)
<b>3SM 62</b>	163.3 (6.429)	165.3 (6.508)	160.6 (6.323)

**Warning.**

The pressure relief valve can be applied by substituting the rear cover.

It is supplied only with aluminium flange and cover.

The showed motor is clockwise rotation.

The opening of the pressure relief valve should be carry out for times not over 7" each minute to avoid the overheating of the pump.

**SEE PAGES 219/220 FOR PORT SIZES AVAILABLE**

Example of ordering code

3SM	22	D	SAE B	-	10	G	(VT)	VLP-I	(N)
-----	----	---	-------	---	----	---	------	-------	-----

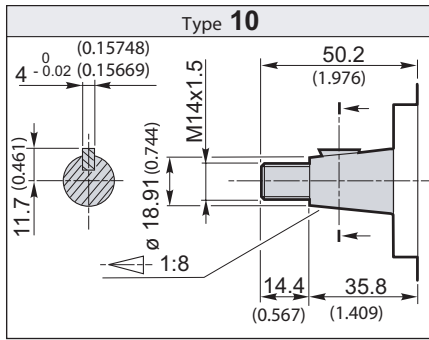
<b>VLP-I</b>	Cover with VLP	<b>VPL-I</b> (at internal exhaust)
<b>(N)</b>	Spring type	<b>B - N - R</b> (See table)

		Spring type		
		B	N	R
		white spring	black spring	red spring
Calibration fields*	[bar] (psi)	10 ÷ 100 (145 ÷ 1450)	30 ÷ 280 (435 ÷ 4060)	80 ÷ 380 (1160 ÷ 5510)

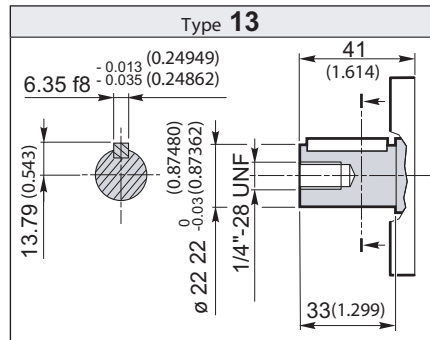
\* Without setting request, it will be considered standard (black spring: 2175 psi).

SEE PAGE 226 FOR PRICES

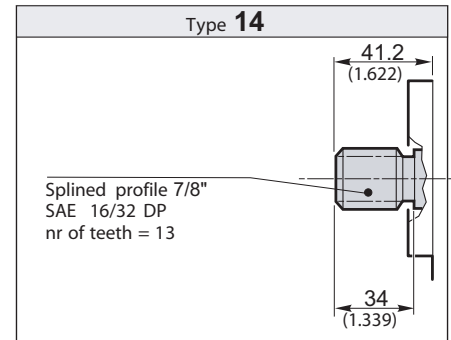
# MOTORS GROUP 3 • AVAILABLE SHAFTS



Torque 240 Nm / Torque 177 ft-lbs

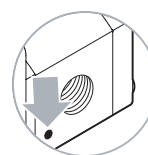
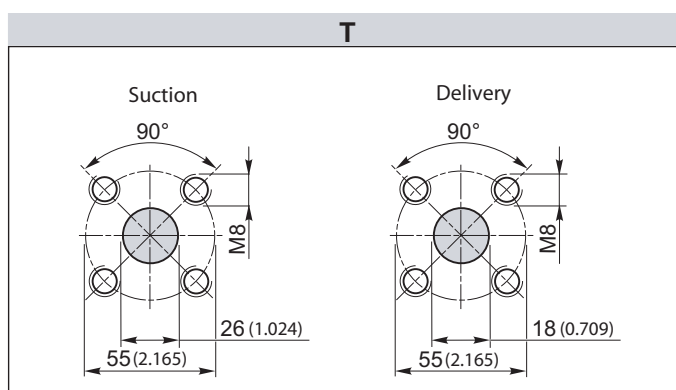
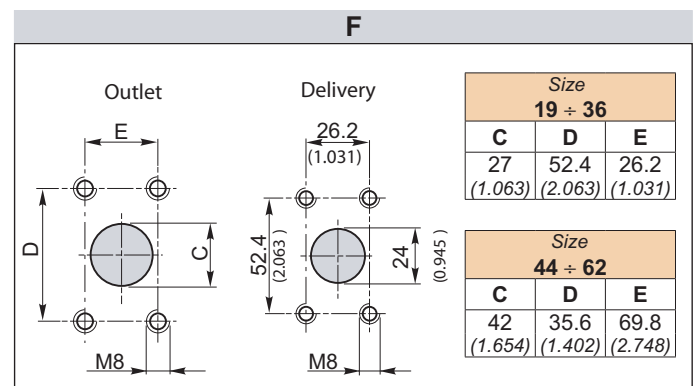
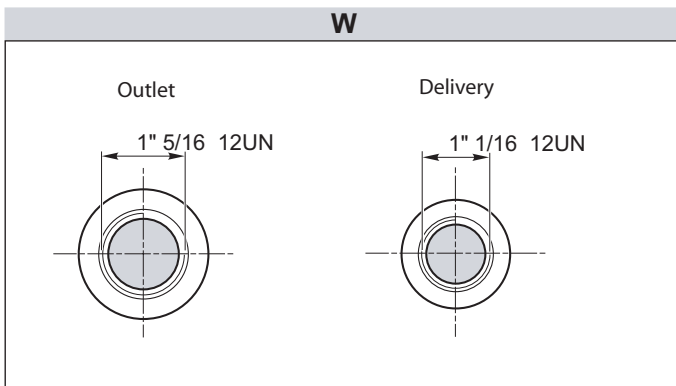
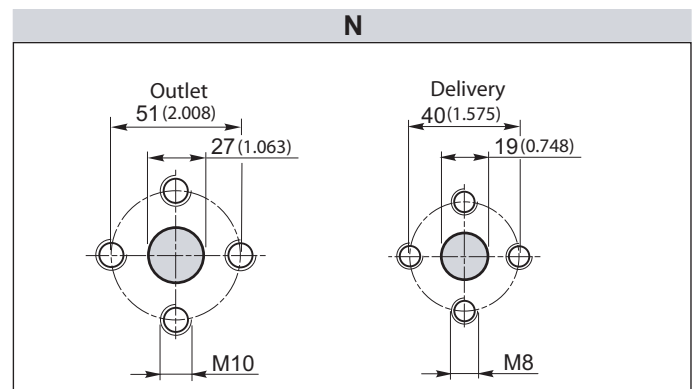
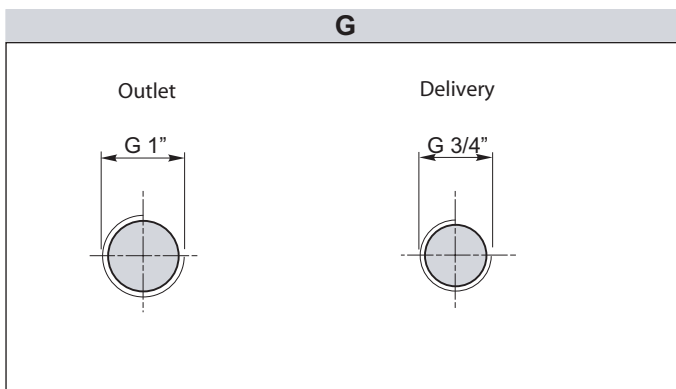


Torque 240 Nm / Torque 177 ft-lbs

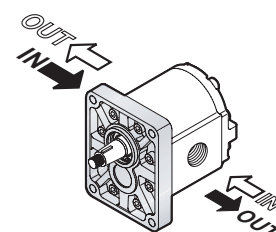


Torque 240 Nm / Torque 177 ft-lbs

## PORT CONNECTIONS for D-S motors



The sign on the body identifies the **outlet side** for the motors.



Connections positions

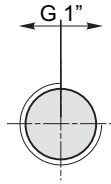
Rotation	
D	S

SEE PAGE 226 FOR PRICES



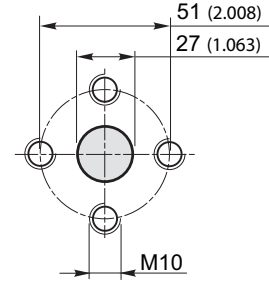
**G**

Outlet - Delivery



**N**

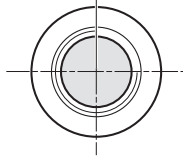
Outlet - Delivery



**W**

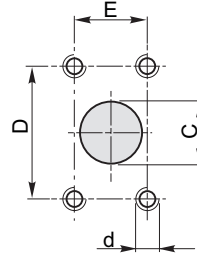
Outlet

1" 5/16 12UN



**F**

Outlet

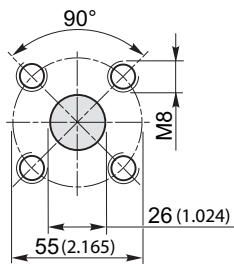


Size 19 ÷ 36			
C	D	E	d
27 (1.063)	52.4 (2.063)	26.2 (1.031)	M8

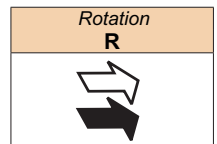
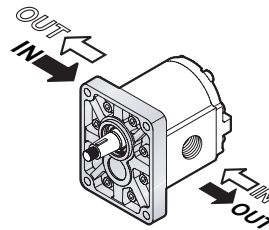
Size 44 ÷ 62			
C	D	E	d
32 (1.260)	58.7 (2.311)	30.2 (1.189)	M10

**T**

Outlet - Delivery



Connections positions



# GROUP 1 GEAR PUMPS + GEAR MOTORS PRICE LIST

DESCRIPTION	4 BOLT FLANGE STANDARD	FLANGE MINI-POWERPACK	FLANGE E32C FLANGE E32B	2 BOLT FLANGE SAE AA
PUMP 1SPA 0,9	£164.97	£164.97	£173.20	£173.20
PUMP 1SPA 1,2	£164.97	£164.97	£173.20	£173.20
PUMP 1SPA 1,6	£164.97	£164.97	£173.20	£173.20
PUMP 1SPA 2,0	£164.97	£164.97	£173.20	£173.20
PUMP 1SPA 2,5	£168.83	£168.83	£177.26	£177.26
PUMP 1SPA 3,2	£168.83	£168.83	£177.26	£177.26
PUMP 1SPA 3,7	£168.83	£168.83	£177.26	£177.26
PUMP 1SPA 4,2	£168.83	£168.83	£177.26	£177.26
PUMP 1SPA 5,0	£173.44	£173.44	£182.11	£182.11
PUMP 1SPA 6,3	£173.44	£173.44	£182.11	£182.11
PUMP 1SPA 7,8	£178.64	£178.64	£187.57	£187.57
PUMP 1SPA 9,8	£184.87	£184.87	£193.21	£193.21

ADD-ON EXTRAS (NOT SPARES PRICES)	
SEAL FOR HIGHT PRESSURE (K)	£5.78
STND and SAE AA PUMP with OR	£5.66
SHAFT SEAL (EB32C)	£6.07
SHAFT SEAL (H)	£7.32
VITON SEAL	£30.07
END-COVER with MAIN RELIEF VALVE INTERNAL EXHAUST	£65.78

ADDITIONAL PRICES FOR PRICING UP TANEM PUMPS. GROUP 1 BASED	
KIT MULTIPLE PUMP 1P + 1P Standard	£78.62
DISJUNCTOR VALVE ON INTERMEDIATE FLANGE	£212.27
COMMON SUCTION (1st 2nd and 3rd pump)	additional price by 5% on multiple pump

# GROUP 2 GEAR PUMPS + GEAR MOTORS PRICE LIST

FOR TRIPLE AND QUADRUPLE KEEP ADDING  
KIT MULTIPLE PUMP  
• TANDEM = 1 KIT • TRIPLE = 2 KITS  
• QUADRUPLE = 3 KITS

DESCRIPTION	4 BOLT ALUMINIUM FLANGE STANDARD	ALUMINIUM FLANGE B50-B80-E52-M52-SAE A	ALUMINIUM FLANGE PRKS	4 BOLT CAST-IRON FLANGE STANDARD	2 BOLT CAST-IRON FLANGE SAE A
PUMP 2 SP 4	£204.28	£214.30	£247.75	£231.27	£241.27
PUMP 2 SP 6	£204.28	£214.30	£247.75	£231.27	£241.27
PUMP 2 SP 8	£204.28	£214.30	£247.75	£231.27	£241.27
PUMP 2 SP 11	£210.45	£214.30	£253.91	£238.19	£248.22
PUMP 2 SP 14	£210.45	£214.30	£253.91	£238.19	£248.22
PUMP 2 SP 16	£210.45	£214.30	£253.91	£238.19	£248.22
PUMP 2 SP 19	£217.38	£228.18	£271.47	£244.37	£255.16
PUMP 2 SP 22	£217.38	£228.18	£271.47	£244.37	£255.16
PUMP 2 SP 26	£222.77	£233.56	£271.47	£249.40	£260.55

ADD-ON EXTRAS (NOT SPARES PRICES)	
SUPPORT INCORPORATED IN THE FLANGE	£96.34
SUPPORT Ø 50,8 - shaft Ø 22	£106.51
FLANGE WITH BEARING (for B50C and B80C)	£35.46
FLANGE WITH O-Ring	£8.47
SHAFT SEAL (H)	£10.02
SEAL FOR HIGH PRESSURE (K) - 30 bar	£5.78
SEAL FOR HIGH PRESSURE (KK) - 100 bar	£11.60
SHAFT SEAL (MC52CX)	£6.73
SPECIAL KEY draw.25053	£5.97
VITON SEAL	£30.07
END-COVER with MAIN RELIEF VALVE INTERNAL EXHAUST	£70.14
END-COVER with MAIN RELIEF VALVE EXTERNAL EXHAUST	£74.78

ADD-ON EXTRAS (NOT SPARES PRICES)	
UNIDIRECTIONAL MOTOR (CLOCKWISE OR ANTICLOCKWISE MOTOR)	£10.02
BIDIRECTIONAL PUMP AND MOTOR (REVERSIBLE MOTOR)	£49.33
END COVER TWO SPEED (ON UNID. MOTOR)	£322.99
ANTICAVITATION VALVE VA MOTORE	£89.04
SPECIAL COVER WITH PRIORITY VALVE - VRF	£180.98
SPECIAL COVER WITH PRIORITY VALVE AND PRESSURE VALVE - VRF+VLP	£214.13

ADDITIONAL PRICES FOR PRICING UP TANDEM PUMPS. GROUP 2 BASED		
KIT MULTIPLE PUMP	GR.2SP + GR.1	£90.20
KIT MULTIPLE PUMP	GR.2SP + GR.2SP	£90.20
Common suction (1st 2nd and 3rd pump)		additional price by 5% on multiple pump

# GROUP 3 GEAR PUMPS + GEAR MOTORS PRICE LIST

FOR TRIPLE AND QUADRUPLE KEEP ADDING  
KIT MULTIPLE PUMP  
• TANDEM = 1 KIT • TRIPLE = 2 KITS  
• QUADRUPLE = 3 KITS

DESCRIPTION	4 BOLT ALUMINIUM FLANGE STANDARD	2 BOLT ALUMINIUM FLANGE SAE B	4 BOLT CAST-IRON FLANGE	2 BOLT CAST-IRON FLANGE SAE B
PUMP 3 SP 19	£392.37	£413.18	£439.39	£466.70
PUMP 3 SP 22	£392.37	£413.18	£439.39	£466.70
PUMP 3 SP 29	£404.70	£425.53	£451.73	£479.01
PUMP 3 SP 33	£404.70	£425.53	£451.73	£479.01
PUMP 3 SP 36	£404.70	£425.53	£451.73	£479.01
PUMP 3 SP 44	£417.04	£437.86	£464.06	£492.88
PUMP 3 SP 52	£417.04	£437.86	£464.06	£492.88
PUMP 3 SP 62	£437.86	£458.66	£484.88	£514.44

ADD-ON EXTRAS (NOT SPARES PRICES)	
FLANGE WITH O-Ring	£12.71
SHAFT SEAL (H)	£10.02
SEAL FOR HIGHT PRESSURE (K)	£5.78
VITON SEAL	£31.60
UNIDIRECTIONAL MOTOR	£49.75
BIDIRECTIONAL MOTOR	£67.54
SUPPORT ZFC	£183.43
END-COVER WITH MAIN RELIEF VALVE	£93.28

ADDITIONAL PRICES FOR PRICING UP TANDEM PUMPS. GROUP 3 BASED		
KIT MULTIPLE PUMP	GR.3SP + GR.1SP	£131.80
KIT MULTIPLE PUMP	GR.3SP + GR.2SP	£140.31
KIT MULTIPLE PUMP	GR.3SP + GR.3SP	£148.78

FOR TRIPLE AND QUADRUPLE KEEP ADDING  
KIT MULTIPLE PUMP  
• TANDEM = 1 KIT • TRIPLE = 2 KITS  
• QUADRUPLE = 3 KITS

# GEAR PUMPS

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